

We Claim:

1. An apparatus for displaying preview images to print that outputs user-chosen preview images to print on a display, comprising:

a print preview display unit for performing the steps

of:

generating a plurality of preview images on different visual resolution levels of an object image to print; and

displaying the plurality of preview images in association, while keeping them parallel one another.

2. An apparatus for displaying preview images to print that outputs user-chosen preview images to print on a display, comprising:

a print preview display unit for performing the steps

of:

outputting a page view of a unit page to print as a first-mode preview image;

outputting a composite view of an object image to print as a second-mode preview image, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print;

outputting an enlarged view of a selected spot on a

displayed page to print as a third-mode preview image; and

making the preview images to print of these three modes parallel one another.

3. An apparatus for displaying preview images to print that outputs user-chosen preview images to print on a display, comprising:

a print preview display unit for performing the steps of:

outputting a page view of a unit page to print as a first-mode preview image;

outputting a composite view of an object image to print as a second-mode preview image, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print; and

making the preview images to print of these two modes parallel one another.

4. The apparatus for displaying preview images to print according to Claim 2 wherein:

when said print preview display unit is displaying said first-mode and/or second-mode preview images and third-mode preview image, a spot selected on a page view and/or a page selected among the element pages is framed so as to be

recognizable as being displayed as said third-mode preview image.

5. The apparatus for displaying preview images to print according to Claim 2 wherein:

when said print preview display unit is displaying said first-mode and/or said third-mode preview images and said second-mode preview image, a page and/or a spot selected on said second-mode preview image are framed so as to be recognizable as being displayed as said first-mode and/or said third-mode preview images.

6. The apparatus for displaying preview images to print according to Claim 2 wherein:

when said print preview display unit outputs said first-mode and second-mode preview images, an appropriately reduced image is displayed from bitmap data into which data for printing an object image is converted; whereas, when said print preview display unit outputs said third-mode preview image, an image of a selected spot is displayed from bitmap data into which data for printing an object image is converted, but equally scaled to the image from the data for print.

7. The apparatus for displaying preview images to print

according to Claim 2 wherein:

said print preview display unit takes control action of making said data for printing an object image accessible to a phase of preview processing exclusively at a time and generates preview images in phases by orderly accessing said data for printing an object image under the control.

8. The apparatus for displaying preview images to print according to Claim 7 wherein:

said print preview display unit transfers said data for printing an object image into a memory of relatively faster accessibility while taking said control action of making said data for printing an object image accessible to a phase of preview processing exclusively at a time.

9. The apparatus for displaying preview images to print according to Claim 7 wherein:

said print preview display unit includes a unit for facilitating the access to said data for printing an object image by indirectly indicating the locations of elements of the data while taking said control action of making said data for printing an object image accessible to a phase of preview processing exclusively at a time.

10. The apparatus for displaying preview images to print according to Claim 2 wherein:

said print preview display unit can accept request by user action that the user selects one of the plurality of page images displayed in said second mode and displays the selected page in said first mode upon accepting the request by user action.

11. The apparatus for displaying preview images to print according to Claim 2 wherein:

said print preview display unit can accept request by user action that the user selects one of the plurality of page images displayed in said second mode and sets whether to print the selected page upon accepting the request by user action.

12. An apparatus for displaying preview images to print that outputs user-chosen preview images to print on a display, comprising:

a unit for showing progress of preview generation by which the progress of generating a preview image to print is shown in predetermined steps as the preview images to print are processed for output.

13. An apparatus for displaying preview images to print that outputs user-chosen preview images to print on a display,

comprising:

a unit for inputting a command to stop preview, allowing the user to input a command to stop the processing for outputting the preview images to print, by which said apparatus aborts generating the preview images to print when the user inputs a command to stop preview by using the unit for inputting a command to stop preview.

14. A method for displaying preview images to print by which user-chosen preview images to print are output on a display, comprising:

a print preview display process for performing the steps of:

generating a plurality of preview images on different visual resolution levels of an object image to print; and

displaying the plurality of preview images in association, while keeping them parallel one another.

15. A method for displaying preview images to print by which user-chosen preview images to print are output on a display, comprising:

a print preview display process for performing the steps of:

outputting a page view of a unit page to print as a

first-mode preview image;

outputting a composite view of an object image to print as a second-mode preview image, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print;

outputting an enlarged view of a selected spot on a displayed page to print as a third-mode preview image; and

making the preview images to print of these three modes parallel one another.

16. A method for displaying preview images to print by which user-chosen preview images to print are output on a display, comprising:

a print preview display process for performing the steps of:

outputting a page view of a unit page to print as a first-mode preview image;

outputting a composite view of an object image to print as a second-mode preview image, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print; and

making the preview images to print of these two modes parallel one another.

17. A method for displaying preview images to print by which user-chosen preview images to print are output on a display, comprising:

a process for showing progress of preview generation by which the progress of generating a preview image to print is shown in predetermined steps as the preview images to print are processed for output.

18. A method for displaying preview images to print by which user-chosen preview images to print are output on a display, comprising:

a stop process that is activated by a unit for inputting a command to stop preview, allowing the user to input a command to stop the processing for outputting the preview images to print, said stop process wherein generating the preview images to print is aborted when the user inputs a command to stop preview by using the unit for inputting a command to stop preview.

19. A computer-readable medium having a program for displaying preview images to print recorded thereon, said program outputting user-chosen preview images to print on a display, said computer-readable medium having computer-executable instructions for implementing a print preview display function comprising:



generating a plurality of preview images on different visual resolution levels of an object image to print; and

displaying the plurality of preview images in association, while keeping them parallel one another.

20. A computer-readable medium having a program for displaying preview images to print recorded thereon, said program outputting user-chosen preview images to print on a display, said computer-readable medium having computer-executable instructions for implementing a print preview display function comprising:

outputting a page view of a unit page to print as a first-mode preview image;

outputting a composite view of an object image to print as a second-mode preview image, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print;

outputting an enlarged view of a selected spot on a displayed page to print as a third-mode preview image; and

making the preview images to print of these three modes parallel one another.

21. A computer-readable medium having a program for displaying preview images to print recorded thereon, said program

099887-000704

outputting user-chosen preview images to print on a display, said computer-readable medium having computer-executable instructions for implementing a print preview display function comprising:

outputting a page view of a unit page to print as a first-mode preview image;

outputting a composite view of an object image to print as a second-mode preview image, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print; and

making the preview images to print of these two modes parallel one another.

22. A computer-readable medium having a program for displaying preview images to print recorded thereon, said program outputting user-chosen preview images to print on a display, said computer-readable medium comprising:

computer-executable instructions for implementing a function of showing progress of preview generation, by which the computer outputs the progress of generating a preview image to print in predetermined steps on a display as the preview images to print are processed for output.

23. A computer-readable medium having a program for displaying

preview images to print recorded thereon, said program outputting user-chosen preview images to print on a display, said computer-readable medium including:

computer-executable instructions for implementing a stop function that is activated by a unit for inputting a command to stop preview, allowing the user to input a command to stop the processing for outputting the preview images to print, by which the computer aborts generating the preview images to print when the user inputs a command to stop preview by using the unit for inputting a command to stop preview.

24. An apparatus for displaying preview images to print that outputs preview images to print on a display from print job data supplied from an application or an operating system and spooled in a spool file, comprising:

a plurality of image generating unit for reading said spool file and generating a plurality of preview images on different visual resolution levels of an object image to print; and

a parallelism of images keeping unit for keeping the preview images being displayed by the plurality of image generating unit parallel one another.

25. An apparatus for displaying preview images to print that

outputs preview images to print on a display from print job data supplied from an application or an operating system and spooled in a spool file, comprising:

a first image generating unit for reading said spool file and outputting a page view of a unit page to print;

a second image generating unit for reading said spool file and outputting a composite view of an object image to print, said composite view consisting of a plurality of element pages which are to be printed separately and integrated into a complete print;

a third image generating unit for reading said spool file and outputting an enlarged view of a selected spot on said page view output; and

a spot view control unit for marking a page corresponding to the unit page view output by said first image generating unit and a spot corresponding to the enlarged spot view output by said third image generating unit on a composite preview image to print, output by said second image generating unit and marking a spot corresponding to the enlarged spot view output by said third image generating unit on a page preview image to print, output by said first image generating unit.

26. An apparatus for displaying preview images to print that outputs preview images to print on a display from print job data

